UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/014,993	12/11/2001	Alan B. Touchberry	H16-25558US	3362

7590 12/17/2003

Dennis C. Bremer
Honeywell International Inc.
101 Columbia Road
P.O. Box 2245
Morristown, NJ 07962-2245

EXAMINER	
DONG, DALEI	

ART UNIT	PAPER NUMBER
2875	

DATE MAILED: 12/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/014,993	TOUCHBERRY ET AL.	
	Examiner	Art Unit	
	Dalei Dong	2875	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 November 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3-5, 8, 10, 12, rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,670,691 to Podgorski.

Regarding to claims 1, 3-5, 8, 10, 12, Podgorski discloses in Figure 1, "a ring laser angular rate sensor apparatus 10. The assembly includes a mechanically and thermally stable block 15 such as fused quartz and the like. Block 15 provides plurality of interconnected cavities or tunnels including cavities 16, 17, 18, 19, 20, 21, 22, 23, and 24. Cavities 17, 20, and 23 form, at least in part, a triangular shaped optical closed-loop path. At each of the corners of the block is provided a wave reflecting means which is illustrated in FIG. 1 by means 20a, 20b, and 20c, which respectively provide wave reflecting surfaces 21a, 21b, and 21c. The ring laser angular rate sensor apparatus also includes a first anode 30 in communication with cavity 18 and cavity 17 ***(cavities and getter portion are interconnected with each other)***, a second anode 31 in communication with cavity 24 and cavity 23, and a cathode 32 in communication with cavities 21 and 20' (column 2, line 3-18).

Podgorski also discloses in Figure 1, "Anode 30 comprises a head portion 60 arranged in such a manner to engage block 15 surrounding cavity 18 for sealing off the surrounding atmosphere from the gas filled cavity. Extending from head portion 60 is a stem portion 61 disposed in cavity 18. Substantially surrounding stem portion 61 is control guide 63 ***(forms the getter well around the getter)*** which may be cylindrical in shape. Also extending from head portion 60 is guiding means 63" (column 2, line 38-45).

Podgorski further discloses in Figure 1, "stem portion 61 ***(getter located in a getter well)*** is intended to be composed of, at least in part, a getter material, for example, an alloy of titanium. Guiding means 63 may be anodized aluminum having a function as will be described below. Head portion 60 is adapted to have terminal means for connecting anode 60 to an electric potential source" (column 2, line 46-51).

Podgorski further yet discloses in Figure 1, "the sputtering guide 63 surrounding the getter material stem portion 61 is provided so that only selected surfaces of the stem portion are sputtered to control the amount of degradation of the getter material as well as focus the sputtering away toward cavity 17 ***(hole connected the getter well and a cavity)***" (column 3, line 29-34).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2, 6-7, 9 and 11, rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,670,691 to Podgorski.

Regarding to claims 2, 9, it is old and well known in the art to utilize a barium alloy as the getter material for discharge device with inert gas, and further Applicant has disclosed that barium and titanium or zirconium alloys can used interchangeably as the getter material, and Podgorski teaches the use of titanium alloy as the getter material in column 2, lines 47-48. Furthermore, Podgorski discloses the claimed invention except for the getter composed of a barium alloy. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilize the barium alloy, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin,* 125 USPQ 416.

Regarding to claims 6, Podgorski discloses "in order to provide a getter, prior art ring laser structures and processes include a getter assembly consisting of a snap ring welded to a getter pan containing the getter material. This assembly is clamped inside the optical cavity of the ring laser structure. The getter material is flashed and the cavity closed off at its gas-filling pinch tube leaving the getter assembly inside the cavity. This system has several disadvantages. Particles are shed from the getter assembly due to shock, vibration, and/or temperature variations. This particulate matter contaminates the laser and reduces the useful life thereof. Further, a certain amount of contaminated gases

is emitted from the getter material just before it flashes which also reduces the life of the laser" (column 1, line 35-48).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilize the snap ring of Podgorski for the ring laser angular rate sensor apparatus of Podgorski in order to securely and safely hold the getter material to the getter well.

Regarding to claims 7, 11, Podgorski discloses the claimed invention except for the specific dimension of the hole. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have arranged the dimension of the hole according to the design requirements, since it has been held that where the general condition of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller,* 105 USPQ 233. Furthermore, Applicant has not establish the criticality of the dimension of the hole to the invention in the disclosure, and neither comparative analysis nor study has been done to show the improve and advantage of the claimed specific dimension of the hole over the prior art of record.

5. Claims 13-15, 18, 20-29 and 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,740,985 Podgorski.

Regarding to claim 13, 15, 18, 23-24, 26-27 and 29 Podgorski discloses in Figure 2, "the getter assembly in accordance with the present invention which serves as a getter

assembly and an anode 18 and/or 19. It should be understood by those skilled in the art that the getter assembly in accordance with the present invention could be used as a separate component and not serve a dual function as an anode. Nevertheless the getter assembly shall be described here in its dual function capacity" (column 2, line 40-49).

Podgorski also discloses in Figure 2, "the getter assembly as illustrated in FIG. 2 is comprised of a housing 210 for forming a cavity 212 ***(getter well)***. Housing 210 is shown to be cylindrically shaped in FIG. 2, but is only exemplary, and it should be understood that the shape of the housing and the cavity is not critical to the invention herein. The housing as is shown in FIG. 2 and the side view shown in FIG. 3 could include a mounting flange 214. Attached to the mounting flange is an end cover 216 ***(disk or diffusion barrier)*** for completely covering the passageway into cavity 212. The end cover may, by way of example, be welded ***(seal)*** to the housing flange 214. The top of the housing includes an insulator material 230 which allows passage of electrodes 241 and 243 to be in communication with cavity 212. Connected between electrodes 241 and 243 within cavity 212 is a getter material 250 ***(a getter)*** suspended within cavity 212. The end cover 216 and insulator 230 are attached to housing 210 to form a gas tight cavity 212. Further, electrodes 241 and 243, passing through insulator 230 are also constructed to insure a gas tight cavity 212. Lastly, a pinch tube 260 is welded to housing 210 for purposes as will be described" (column 2, line 50 to column 3, line 2).

Podgorski further discloses in Figure 2, "The end cover which serves as a cover of cavity 212 also serves as an end cover for passageway 21. The material and thickness of end cover 216 is chosen to be permeable to gas in very minute quantities. Preferably the

end cover is very thin and allows the hydrogen to diffuse through the cover and be exposed to the surface within cavity 212. For example, Zirconium is a material which can serve the intended function of end cover 216. In its intended operation, minute quantities of the hydrogen contaminant gas within lasing gas is allowed to molecularly pass through end cover 216 in order to be neutralized by the getter material within cavity 212. Thus, in this manner the gas contaminants can be eliminated from the lasing cavity. Because of the "sealing" function of end cover 216, no particulate getter material matter can ever enter into the passageways and interconnected cavities of laser block 10" (column 3, line 39 to column 4, line 2).

Podgorski further discloses in Figure 2, "the end cover which serves as a cover of cavity 212 also serves as an end cover for passageway 21. The material and thickness of end cover 216 is chosen to be permeable to gas in very minute quantities. Preferably the end cover is very thin and allows the hydrogen to diffuse through the cover and be exposed to the surface within cavity 212. For example, Zirconium is a material which can serve the intended function of end cover 216. In its intended operation, minute quantities of the hydrogen contaminant gas within lasing gas is allowed to molecularly pass through end cover 216 in order to be neutralized by the getter material within cavity 212. Thus, in this manner the gas contaminants can be eliminated from the lasing cavity. Because of the "sealing" function of end cover 216, no particulate getter material matter can ever enter into the passageways and interconnected cavities of laser block 10" (column 3, line 39 to column 4, line 2).

Podgorski discloses the claimed invention except for the disk is composed of a same type of material as the gyroscope block; however Zerodur material is an old and well-known in the art to compose of a gyroscope block and Zerodur material process the gas permeability to gas in very minute quantities as taught by Podgorski. It would have been obvious to one avhing ordinary skill in the art at the time the invention was made to have utilize the Zerodur material for the gyroscope block and the disk in order to ease the manufacturing process of the gyroscope, further it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin,* 125 USPQ 416.

Regarding to claims 14, 22, 28 it is old and well known in the art to utilize a barium alloy as the getter material for discharge device with inert gas, and further Applicant has disclosed that barium and titanium or zirconium alloys can used interchangeably as the getter material, and Podgorski teaches the use of titanium alloy as the getter material in column 2, lines 47-48. Furthermore, Podgorski discloses the claimed invention except for the getter composed of a barium alloy. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilize the barium alloy, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin,* 125 USPQ 416.

Regarding to claims 20, 25, Applicant has established the criticality of the indium seal, and, furthermore, Podgorski discloses the claimed invention except for the seal is composed of indium. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilize the indium, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin,* 125 USPQ 416.

Regarding to claims 21, Podgorski discloses "in some ring laser angular rate sensors, a getter assembly consisting of a snap ring welded to a getter pin containing the getter material is clamped inside the ring laser cavity. The getter material is flashed and the sensor cavity is closed off at its pinch tube, leaving the getter assembly inside the lasing cavity. This system has several disadvantages. Particles shed from the delivery system due to shock, vibration, and/or temperature variations, can contaminate the sensor and reduce its useful life. Further, a certain amount of contaminated gas is emitted from the getter material just before it flashes. Also, some contaminant gases may be rubbed off during insertion of the getter delivery system into the sensor" (column 1, line 33-47).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilize the snap ring of Podgorski for the ring laser angular rate sensor apparatus of Podgorski in order to securely and safely hold the getter material to the getter well.

Regarding to claims 30-34, Podgorski discloses the claimed invention except for the diffusion layer is composed of barium nitride. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilize barium nitride as the diffusion barrier, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin,* 125 USPQ 416.

6. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,740,985 Podgorski in view of U.S. Patent No. 5,856,995 to Morris.

Regarding to claims 16 and 17, Podgorski discloses a system for restricting a getter comprising a getter located in a getter well; and a disk separating the getter well from a cavity. However, Podgorski does not disclose the disk is composed of glass and the glass is Zerodur.

Morris teaches "a typical laser assembly for a ring laser gyroscope is built on a laser frame 10 within which are contained laser bores 12 which hold the helium neon lasing gas mixture and further define the closed laser path. The laser frame 10 is typically made from a low thermal expansion lithium aluminum silicate glass-ceramic such as the material known by the Trademark Zerodur. Such lithium aluminum silicate glass-ceramic materials typically exhibit ionic conductivity values higher than most other glass and ceramic materials. Attached to the outer surfaces of the laser frame are laser mirrors 13, anode electrodes 14 and a cathode electrode 15. Mirrors 13 are typically attached to the carefully polished corners of the frame by direct optical contacting. The

anode 14 and cathode 15 electrodes are typically attached to the frame by means of indium vacuum seals 16. In addition to the components shown, the frame typically contains getter wells and getters to assure high purity in the lasing gas mixture and a centrally mounted mechanical flexure for the purpose of dithering the gyro to prevent laser mode locking at low rotation rates. Also not shown are mechanisms for moving one or more of the mirrors to maintain constant optical path length around the closed laser path. FIG. 1 is meant only to portray features of a typical ring laser design. Many variations are possible with respect to the number of mirrors, materials of construction, attachment methods etc. as is commonly known to those skilled in the art" (column 3, line 56 to column 4, line 15).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have compose the disk of Podgorski using the Zerodur glass of Morris in order to efficiently control the amount of the diffused gas into the getter cavity and thus controls the impurity of the discharge gas.

Response to Arguments

7. Applicant's arguments filed November 17, 2003 have been fully considered but they are not persuasive.

In response to Applicant's argument that Podgorski '691fails to teach or suggest the getter well is removed from a cavity and a method of restricting the getter. Examiner asserts that Podgorski '691 teaches in Figure 1, the getter well (18 and 24) is removed from a cavity (16, 19 and 22). Also, as shown in Figure 1 of Podgorski '691, the getter

well is removed from the cavity and connected by holes 17, 20 and 23 and thus restricting the getter from the cavity. Thus, Examiner asserts that Podgorski '691 reference is valid and maintains the rejection.

Also, in response to Applicant's argument that Podgorski '985 fails to teach or suggest the disk and the gyroscope block are composed of the same type of material. Examiner asserts that Zerodur material is an old and well known in the art to compose of a gyroscope block and Zerodur material process the gas permeability to gas in very minute quantities as taught by Podgorski. It would have been obvious to one avhing ordinary skill in the art at the time the invention was made to have utilize the Zerodur material for the gyroscope block and the disk in order to ease the manufacturing process of the gyroscope, further it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin,* 125 USPQ 416. Thus, Examiner assert that the Podgorski '985 reference is valid.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalei Dong whose telephone number is (703)308-2870 (after January 14, (571)272-2370). The examiner can normally be reached on 8 A.M. to 5 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (703)305-4939 (after January 14, (571)272-2378). The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

D.D.
December 10, 2003